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10/611,657	06/30/2003	Ross G. Cutler	MS1-1504US	1984

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EXAMINER	
WANG, CLAIRE X	
ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/27/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/27/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lhptoms@leehayes.com

Office Action Summary	Application No.	Applicant(s)	
	10/611,657	CUTLER, ROSS G.	
	Examiner	Art Unit	
	Claire Wang	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 9, 10, 11, 12, 19, and 20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 9, 10, 11, 12, 19, and 20 defines a computer readable media embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory

and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed a computer readable media can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8, 12, 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by David et al. (US 6,816,603 B2).

As to claim 1, David et al. (from this point forward shall be referred to as David) teaches a method for determining height (top y/x, Fig. 10) parameters that describe a dynamically varying height (Fig. 10 labels the upper boundary of the patient to be Top Y/X; this is interpreted to be height. When the subject is walking the point Top Y/X changes by small degrees, thus making it varying) of an ambulatory subject (walking patient, Col. 6 lines 29-32) based on video analysis (Col. 1 lines 41-43) of the subject, comprising: acquiring a sequence of images (sequence of silhouettes, Col. 13 lines 34-41) that collectively captures the gait (motion portraits, Col. 13 lines 34-48) of the subject. David also teaches measuring a dynamically varying height function (sinusoidal curve; Fig. 11) of the subject based on an analysis of the varying height of the subject in the sequence of images (information of the gait and balance is used to generate the sinusoidal curve; Col. 18 lines 39-57); and fitting the dynamically varying height function of the subject to a model ("finger print", Fig. 9a) that describes varying height, wherein the height parameters correspond to parameters used in the model.

As to claim 5, it differs from claim 1 only in that claim 1 is a method claim whereas claim 5 is the apparatus of claim 1. Thus claim 5 is analyzed previously discussed as respect to claim 1.

As to claim 2, David teaches the model ("finger print", Fig. 9a) represents an ideal variance in height (normal way of walking, Col. 13 lines 64-66) as a sinusoidal function (Fig.11).

As to claim 3, David teaches the parameters used in the model include a first parameter that describes a baseline height value (it is mentioned that an example of a measured parameter is the maximum height that a patient's foot is raised from the ground. It is then also possible to measure the overall patient's height; Col. 6 lines 17-20) exhibited by a person in ambulatory motion, and a second value that describes a maximum deviation (the normal walk pattern or "finger print" of a patient is given in a range, once a value is out of the range of acceptable values then the system will be notified; Col. 6 lines 22-28) from the baseline height value.

As to claim 4, David teaches the measuring of the dynamically varying height function includes: extracting a series of depictions of the ambulatory subject from a larger body of image information (the subject is distinguished from the background using background subtraction; Fig. 4) contained within the sequence of images (silhouette sequence, Col. 13 lines 34-41) defining a series of bounding boxes that

enclose respective depictions (edge detection, Fig. 4). David further teaches that for each of the depictions, determining a distance between a point midway between the feet of the subject (the vertical line going through the patient divides the patient in half; Fig. 10) and a top of the depiction's associated bounding box (the vertical line is going through the middle of the patient; Fig. 10).

As to claim 6, it differs from claim 2 only in that claim 2 is a method claim whereas claim 6 is the apparatus of claim 2. Thus claim 6 is analyzed previously discussed as respect to claim 2.

As to claim 7, it differs from claim 3 only in that claim 3 is a method claim whereas claim 7 is the apparatus of claim 3. Thus claim 7 is analyzed previously discussed as respect to claim 3.

As to claim 8, it differs from claim 4 only in that claim 4 is a method claim whereas claim 8 is the apparatus of claim 4. Thus claim 8 is analyzed previously discussed as respect to claim 4.

As to claim 12, it is the computer readable medium of claim 1. Thus claim 12 is analyzed the same way as claim 1. See above for details.

As to claim 14, David teaches wherein fitting the dynamically varying height function of the subject to the model comprises real-time analysis of the subject's gait in a real-time mode (David's monitor method is used to monitor patients and the once the motion portrait is captured for the patient it is compared to a normal motion portrait to make sure there is nothing wrong with the patient, this information is then used in a bi-directional real time contact with the subject and the physicians, therefore the comparison of the motion portraits must be done in real time; Col. 8, lines 36-38).

As to claim 15, David teaches wherein extracting a series of depictions of the ambulatory subject comprises a cadence of gait and a stride length of gait (changes in gait may be identified by slow speed and narrow stride width; Col. 3, lines 30-33).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 9-11, 13, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over David in view of Krebs et al. (US 2002/0028003) (from this point forward will be referred to as Krebs).

As to claim 9, David teaches a computer readable medium having processor-executable instructions (computer-based multi-channel data analysis and display unit; Col. 8, lines 12-14), that when executed, direct a computing system to generate a sequence of images (sequence of silhouettes, Col. 13 lines 34-41) that collectively captures the gait of a subject (motion portraits, Col. 13 lines 34-48); measure a dynamically varying height function (sinusoidal curve; Fig. 11) of the subject based on an analysis of the varying height of the subject in the sequence of images (information of the gait and balance is used to generate the sinusoidal curve; Col. 18 lines 39-57); analyze the dynamically varying height function of the subject to a model that describes varying height, wherein one or more height parameters correspond to parameters used in the model (comparing current motion portraits with normal motion portraits; Col. 15, lines 10-15). However, David does not teach extract the one or more height parameters associated with the gait of the subject; compare the extracted one or more height

parameters associated with the gait of the subject to identified gait information corresponding to individuals; and identify the subject based on the gait of the subject.

Krebs teaches acquire an image of an individual computing a gait and anatomy parameter of the individual and determines a match between the parameter of the individual and parameters in reference database to distinguish the individual (Paragraph [0087]). Thus Krebs's method fro distinguishing individuals using gait parameters reads on the claimed method of identifying the subject based on the gait and height parameters. Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to combine David's method of monitoring subjects with Krebs's method of using anatomy and gait parameters to distinguish individuals in order to better identify the subjects being monitored.

As to claim 10, it is the same as claim 4. The only difference between the two claims is that claim 4 teaches a computer readable medium whereas claim 4 teaches a method. Thus claim 10 is analyzed in the same way as claim 4. See above for details.

As to claim 11, it is the same as claim 3. The only difference between the two claims is that claim 3 teaches a computer readable medium whereas claim 4 teaches a method. Thus claim 11 is analyzed in the same way as claim 3. See above for details.

As to claim 13, David does not teach wherein acquiring the sequence of images comprises a fronto-parallel orientation. Krebs teaches a three-dimensional body model

in fronto-parallel orientation (Fig. 7B). Therefore, Krebs's three-dimensional body model reads on the claim fronto-parallel orientation. Thus, it would have been obvious to one ordinarily skilled in the art at the time of the invention to combine David's method of monitoring subjects with Krebs's method of using fronto-parallel model in order to better identify the subjects being monitored.

As to claim 16, Krebs teaches wherein the stride length (step length; [0069]) is measured by determining a length of distance traversed by the subject and the number of steps that the subject took to traverse the distance, and computing the stride length based on the length of distance traversed and the number of steps (Krebs teaches finding cadence as being equal to the number of steps per minute [0072] and the gait velocity [0071] meaning distance over time; therefore it is clear that the stride length may be determined using the combination of cadence and velocity).

As to claim 17, Krebs teaches wherein the cadence and the stride length are related to each other by a linear function and identifying the subject based on the subject's cadence, stride length, and based on the linear function used to relate cadence with stride length (claim 16 demonstrated a relationship between velocity, cadence and step length; thus it is already established that cadence may be related to step length).

As to claim 18, Krebs teaches extracting at least one of the following parametric-derived features from the sequence of images: cadence of gait, stride length of gait or height of the subject (cadence [0072]; step length [0069]; standing height [0059]). Determining a self-similarity plot based on the sequence of images to provide at least one holistic-derived feature and identifying the subject based on the at least one parametric-derived feature and the at least one holistic-derived feature ([0079] teaches that individuals can be identified using the parameters listed above and comparing them to those parameters stored in a reference database).

As to claim 19, it differs from claim 17 only in that claim 17 is a method claim whereas claim 19 is the computer-readable medium of claim 17. Thus claim 19 is analyzed previously discussed as respect to claim 17.

As to claim 20, it differs from claim 18 only in that claim 18 is a method claim whereas claim 20 is the computer-readable medium of claim 18. Thus claim 20 is analyzed previously discussed as respect to claim 18.

Response to Arguments

5. In response to applicant's remarks that David fails to teach height parameters it is noted that Fig. 10 labels the upper boundary of the patient to be Top Y/X. Said Top Y/X is interpreted to be height. When the subject is walking the point Top Y/X changes by small degrees, thus making it varying.

6. In response to applicant's remarks that David fails to teach "height parameters and fitting the dynamically varying height function of the subject to a model that describes varying height" it is noted that David teaches finding a "finger print" of the patient's walking pattern, which is a motion portrait of the patient's way of walk. And the motion portraits can be processed by a motion characteristics calculation, which may include any qualitative measurements that may be calculated based on the motion portrait (Col. 14, lines 1-5). David also teaches comparing current motion portraits with normal motion portraits (Col. 15, lines 10-15).

7. In response to applicant's remarks that David fails to teach, "wherein height parameters correspond to parameters used in the model" it is noted that David teaches comparing current motion portraits with normal motion portraits (Col. 15, lines 10-15).

8. In response to applicant's argument that David is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the claimed invention teaches, "a method for determining height parameters that describe a dynamically varying height of an ambulatory subject based on video analysis of the subject." David teaches the techniques for monitoring a subject may be used for other disciplines including but not limited to physiological analysis using a video camera without markers, thus making David analogous art.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire Wang whose telephone number is 571-270-1051. The examiner can normally be reached on Mid-day flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Claire Wang
02/16/2007

JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER